CLAIMS

We claim:

1. A method of securely displaying visual data comprising the steps of:
   a. encrypting the visual data, whereby encrypted visual data is formed;
   b. transporting the encrypted visual data to a display apparatus;
   c. decrypting the encrypted visual data within the display apparatus such that an electronic version of the visual data is maintained within circuit elements that are substantially inaccessible; and
   d. displaying the visual data as a visual image.

2. The method of claim 1 wherein the circuit elements comprise integrated circuit elements.

3. The method of claim 2 wherein the integrated circuit elements comprise a display circuit and a diffractive light valve, the diffractive light valve displaying the visual image.

4. The method of claim 3 wherein the diffractive light valve comprises a grating light valve.

5. The method of claim 4 wherein the integrated circuit elements comprise portions of a single integrated circuit.

6. The method of claim 4:
   a. wherein the integrated circuit elements comprise individual integrated circuits; and
   b. further comprising the steps of encoding and decoding the visual data in order to transfer the visual data between the individual integrated circuits.

7. The method of claim 4 wherein the display circuit comprises a driver circuit for driving the grating light valve.

8. The method of claim 4 wherein the step of displaying the visual data comprises scanning a line image over a display screen such that the visual image has low persistence.

9. The method of claim 4 wherein the integrated circuit elements comprise a decryption circuit.

10. The method of claim 4 wherein the step of transporting the encrypted visual data comprises electronic transmission.

11. The method of claim 10 wherein the electronic transmission is selected from the group consisting of satellite transmission, optical fiber transmission, and internet transmission.

12. The method of claim 4 wherein the step of transporting the encrypted visual data comprises recording the encrypted visual data on a storage media and physically transporting the storage media.

13. The method of claim 12 wherein the storage media comprises a standard storage media.

14. The method of claim 12 wherein the storage media comprises a non-standard storage media.

15. The method of claim 1:

a. wherein the step of encrypting the visual data comprises uses a public key; and

b. further comprising the step of generating the public key and a private key, the private key residing within the display apparatus.

16. The method of claim 15 wherein the step of generating the public key and the private key takes place within the display apparatus.

17. The method of claim 15

a. wherein the step of generating the public key and the private key takes place outside of the display apparatus; and

b. further comprising the step of inputting the private key to the display apparatus in such a manner that human access to the private key is substantially unavailable.

18. The method of claim 1 wherein the step of encrypting the visual data includes using a secret key and further wherein the step of decrypting the encrypted visual data includes using the secret key.

19. A system for securely transmitting and displaying visual data comprising:

a. an encryption apparatus for encrypting the visual data, whereby encrypted visual data is formed;

b. means for transporting the encrypted visual data from the encryption apparatus to a display facility; and

c. a display apparatus located at the display facility that receives the encrypted visual data, the display apparatus decrypting the encrypted visual data such that an electronic version of the visual data is maintained within circuit elements that are substantially inaccessible, the display apparatus displaying the visual data as a visual image.

20. The system of claim 19 wherein the circuit elements comprise integrated circuit elements.

21. The system of claim 20 wherein the integrated circuit elements comprise a display circuit and further wherein the display circuit comprises a diffractive light valve for displaying the visual image.

22. The system of claim 21 wherein the light valve comprises a grating light valve.

23. The system of claim 22 wherein the integrated circuit elements comprise portions of a single integrated circuit.

24. The system of claim 22 wherein the integrated circuit elements comprise individual integrated circuits and further wherein the integrated circuit elements encode and decode the visual data to transfer the visual data between the individual integrated circuits.

25. The system of claim 22 wherein the display apparatus includes a scanning device for scanning a linear image over a display screen such that the visual image has low persistence.

26. The system of claim 22 wherein the means for transporting the encrypted visual data includes means for electronic transmission.

27. The system of claim 26 wherein the means for electronic transmission is selected from the group consisting of satellite transmission, optical fiber transmission, and internet transmission.

28. The system of claim 22 wherein the means for transporting the encrypted visual data includes a storage media, the storage media holding the encrypted visual data during transport of the storage media.

29. The system of claim 28 wherein the storage media comprises a standard storage media.

30. The system of claim 28 wherein the storage media comprises a non-standard storage media.

31. The system of claim 19 wherein the encryption apparatus uses a public key for encrypting the visual data and further wherein the display apparatus uses a private key for decrypting the visual data, the private key residing within the display apparatus.

32. The system of claim 31 wherein the display apparatus generates the public key and the private key.

33. The system of claim 31 wherein the public key and the private key have been generated outside of the display apparatus and further wherein the private key has been generated and input to the display apparatus in such a manner that human access to the private key is substantially unavailable.

34. The system of claim 19 wherein the encryption apparatus uses a secret key for encrypting the visual data and further wherein the display apparatus uses the secret key for decrypting the visual data.

35. A display apparatus for displaying encrypted visual data comprising circuit elements that are substantially inaccessible, the circuit elements comprising a decryption circuit for decrypting the encrypted visual data, whereby visual data is formed, the circuit elements comprising a display circuit for displaying the visual data as a visual image, such that an electronic version of the visual data is maintained within the circuit elements.

36. The display apparatus of claim 35 wherein the display circuit comprises a diffractive light valve for displaying the visual image.

37. The display apparatus of claim 36 wherein the diffractive light valve is a grating light valve.

38. A display apparatus for displaying encrypted visual data comprising:

a. a decryption circuit for decrypting the encrypted visual data, whereby visual data is formed; and

b. a grating light valve for displaying the visual data as a visual image.